

## REMARKS

This paper is filed in response to the Office Action mailed September 11, 2009. Claims 1-14 were pending in the application. Claims 1, 5, 9, 10 and 13 have been amended. Therefore, claims 1-14 are now pending in the application and are submitted for reconsideration.

### Request for Telephone Interview

Should issue of a final rejection be considered, the Examiner is respectfully requested to contact the undersigned by email to [haitjemac@howrey.com](mailto:haitjemac@howrey.com) in order to schedule a telephone interview.

### Claim Amendments

Claims 1, 5, 9, 10 and 13 have been amended. Support for the amendments of claims 5 and 10 can be found below. Claims 1, 9 and 13 have been amended to correct grammatical errors and/or to bring the claims into conformity with U.S. practice. Therefore no new matter has been added.

#### Claim 1

The limitation of “glycerol” has been added to clarify the nature of the alcohol according to the invention. Support for this amendment may be found in the application as filed in at least pages 8 – 9.

#### Claim 5

The limitation of “raw materials” was removed and the limitations of “the alcohol, aldehyde, ketone and tertiary olefin” was added to clarify that these materials must be selected in such a way so as to be able to be completely dissolved in the fuel. Support for this amendment can be found in the application as filed in at least page 6, wherein glycerin esters are discussed as being disadvantageous because the desirable characteristic of solubility in the fuel cannot be guaranteed. Further, on page 7 of the application as filed, it is stated that “determinant for admixture in Diesel fuel, gasoline, and rapeseed methyl ester is its solubility in these fuel components.” Further, page 8 of the application as filed forms the problem that the invention seeks to solve as “to derivatise glycerin in such a way that the products can be used as fuel components in DK, OK, and rapeseed methyl ester.” One of ordinary skill in the art understands and appreciates that dissolvability (solubility of the component) is one of the

factors in whether products can be used as fuel components, as explicitly discussed in disadvantages of the prior art on pages 6 and 7 of the application as filed.

#### Claim 10

Claim 10 has been amended to clarify that the oxygen-containing compound according to claim 8 is more than 95% pure. The Support for this amendment may be found on at least page 10.

#### **35 U.S.C. §112, second paragraph**

Claims 5-7, 10 and 13 were rejected under 35 U.S.C. § 112, second paragraph as being indefinite and failing to particularly point out the Applicants' invention.

The office action asserts that claims 5-7 are indefinite because it is unclear in what way the raw materials are selected to dissolve completely in the fuel.

Applicants submit that claim 5 has been amended to clarify that the alcohol, aldehyde, ketone and tertiary olefin are selected in such a way that the oxygen-containing compound produced dissolves completely in the fuel in particular in Diesel fuel, gasoline, and/or rapeseed methyl ester. Further, Applicants submit that ample support in the application as filed exists for the characteristic of solubility (dissolvability in the fuel) as a required characteristic for the present invention. See, pages 6, 7 and 8 describing disadvantages of the prior art as including the inability for the components to be soluble in the fuel. Further, the problem to be solved in the present invention includes "derivatizing glycerin in such a way that the products can be used as fuel components in DK, OK, and rapeseed methyl ester." See page 10 of the application as filed. One of ordinary skill in the art would understand and appreciate that dissolvability of the components in the fuel is a requirement for the components to be used as fuel components.

In regard to claim 10, the office action asserts that it is "unclear whether the applicant is suggesting that the oxygen-containing compound contains more than 95% of a certain other compound or if the oxygen-containing compound itself contains more than 95% of itself."

Applicants submit that claim 10 has been amended to clarify that the oxygen-containing compound is at least 95% pure. Support for this amendment can be found on at least page 10 of the application as filed. Further, one of ordinary skill in the art would understand and appreciate that this implies that 95% of the reaction product of the method of producing the oxygen-containing compound used as a fuel additive comprising a) the reaction of a glycerol with an aldehyde or ketone to produce an acetal, and b) etherification of the still free hydroxyl groups of the acetal produce in step a) with tertiary olefins, is the oxygen-

containing compound. In regard to claim 13, the office action asserts that it is unclear what method/process applicant is intending to encompass with the language the use of the oxygen containing compound, since the claim does not set forth any steps involved in the method/process.

Applicants submit that claim 13 has been amended to remove the “use of” language thereby clarifying that claim 13 is a composition of matter claim, and that no recitation of steps is required to render the claim definite.

As such, Applicants submit that the instant §112, second paragraph rejections have been obviated and should be withdrawn.

### **35 U.S.C. §101**

Claim 13 were rejected under 35 U.S.C. § 101 as being an improper process claim.

Applicants submit that claim 13 has been amended to remove the “use of” language, thereby clarifying that claim 13 is still a composition of matter claim.

As such, Applicants submit that the instant §101 rejection has been obviated and should be withdrawn.

### **35 U.S.C. §103(a)**

Claims 1-14 were rejected under 35 U.S.C. § 103(a) as being obvious in view of EP 0718270 A2 to Wessendorf.

Further, claims 8-14 were rejected under 35 U.S.C. §103(a) as being patentable over Germanaud (US 6,113,661).

To establish a *prima facie* case of obviousness, the Examiner must demonstrate three elements: some suggestion or motivation to modify or combine the reference teachings, a reasonable expectation of success, and the combined prior art references must teach or suggest all the claim limitations. MPEP § 2141. Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness, in that the Examiner has failed to provide a combination of prior art references, alone or with general knowledge that teach or suggest all the claim limitations.

#### **Claims 1-14 in view of Wessendorf**

The Office Action asserts that Wessendorf teaches in example 4 a reaction with glycerin, acetone and i-butene. The Examiner admits that “Wessendorf does not seem to explicitly teach etherification of the still free hydroxyl groups of the acetal produced.”

However, the Examiner goes on to state that “it would have been obvious to one of ordinary skill in the art that the 2,2-dimethyl-4-hydroxymethyl-1,3-dioxolan would react with the i-butene to form ethers.”

Applicants respectfully disagree with this assertion and further submit that the Examiner has provided no evidence for this assertion, as required. *See* MPEP § 2144.03. (“It is never appropriate to rely solely on “common knowledge” in the art without evidentiary support in the record, as the principal evidence upon which a rejection was based. *Zurko*, 258 F.3d at 1385, 59 USPQ2d at 1697).

That notwithstanding, the process and resulting product in the Wessendorf reference is different from the claimed invention as amended. In Wessendorf, the acetone and the t-olefin are present at the same time and the reaction with acetone competes with the reaction with i-butene. This causes the production of a number of different reaction products, a large number of which still contain unreacted hydroxyl groups (see, page 7, lines 4-10); in particular 42.2% Di-t-butoxy propanol and even 4.3% mono-t-butoxyl propandiol and 1.2% of 2,2 dimethyl-4-hydroxymethyl-1,3-dioxolane. Thus, in the Wessendorf reference, in example 4 a total of 47.7% still contain hydroxyl groups. In the present invention, by contrast, when first reacting with ketone (acetone) and then with i-butene a complete conversion of the hydroxyl groups is possible. As described in page 10 of the application as filed, a purity of more than 95% was obtained. Applicants have explained this difference by the fact that when the multivalent alcohol reacts with i-butene first, which is clearly the intention of the invention in Wessendorf, the subsequent reaction with acetone is significantly hindered, even almost blocked.

As such, Applicants submit that Wessendorf, alone or in combination with common knowledge cannot teach or suggest the claimed invention as amended. Indeed, the Examiner has provided suggestion for modification of Wessendorf to arrive at the claimed invention. As such, there can be no reasonable expectation of success.

Therefore, Applicants submit that the §103 rejection of claims 1-14 as amended in view of Wessendorf is improper and should be withdrawn.

#### Claims 8-14 in view of Germanaud

Germanaud does not teach or suggest the limitations of claim 1, from which claims 8-14 depend.

Further, the Examiner admits as much that “Germanaud does not seem to explicitly teach an oxygen-containing compound used as fuel additive comprising reaction of a

multivalent alcohol with aldehyde or ketone to produce an acetal, and etherification of the still free hydroxyl groups of the acetal produced with tertiary olefins.”

Germanaud also teaches an additive for a fuel, but does not suggest or teach a oxygen-containing compound according to the claimed invention as amended based on glycerol as a polyol. Rather, as the Examiner has pointed out and as is stated in the Abstract, Germanaud teaches a fuel composition with formula (I), where X is a divalent hydrocarbon-containing group,  $C_nH_{2n}$ . In other words, the formula of Germanaud teaches two hydroxyl groups on one carbon and no hydroxyl groups on an adjacent carbon, which provides a materially different composition.

Further, the products according to Germanaud may comprise unreacted hydroxyl groups, which is an entirely different product than what can be obtained by claim 1 of the present invention as amended, as all hydroxyl groups are reacted off in the present invention by a tertiary olefin after reaction with the aldehyde and the ketone. By contrast, the reaction product of Germanaud does not teach a subsequent reacting off of all hydroxyl groups, as illustrated by the preferred embodiment col. 4, lines 1-8, which discloses 2-(-2-hydroxyethyl)ethoxy-1,3-dioxolane.

Therefore the Germanaud cannot teach or suggest the claimed limitations of claims 8-14 as amended. Moreover, the Examiner has provided no references or general teaching to suggest modifications of Germanaud to arrive at the claimed invention. As such, there can be no reasonable expectation of success. Therefore, the §103 rejection of claims 8-14 as amended over the Germanaud reference is improper and should be withdrawn.

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Extension of Time

Any extension of time that may be deemed necessary to further the prosecution of this application is hereby requested.

Authorization to Charge Fees

The Commissioner is authorized to charge any additional fees which may be required, or credit any overpayment, to Deposit Account No. 08-3038, referencing the docket number shown above.

Authorization to Communicate via email

Pursuant to MPEP 502.03, authorization is hereby given to the USPTO to communicate with Applicant's representative concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file. Applicant's representative, Coraline J. Haitjema, can be reached at email address [haitjemac@howrey.com](mailto:haitjemac@howrey.com).

The Examiner may also contact the undersigned by telephone at the number given below in order to resolve any questions (note, this telephone number is an Amsterdam phone number, Amsterdam time is 6 hours ahead of US east coast time).

Respectfully submitted,

/cjhaitjema/

Coraline J. Haitjema  
Reg. No. 63,192

Date: December 11, 2009

**Customer No. 32,894**  
Howrey LLP  
2941 Fairview Park Drive, Suite 200  
Falls Church, VA 22042  
Fax: 202 383-7195  
Tel: 9-011-31-20-592-4411